

Support of Increased Funding for the
National Institute of Dental and Craniofacial Research (NIDCR)
during fiscal year 2007

Written testimony by

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Summary of Testimony

The American Association of Oral and Maxillofacial Surgery respectfully requests the Subcommittee on Labor, Health and Human Services, Education and Related Agencies to increase fiscal year 2007 funding by 5.3%, or \$410 million, for the National Institute of Dental and Craniofacial Research (NIDCR). Such support is essential to encouraging the research and investigative studies necessary to the development and advancement of oral and maxillofacial surgical and other dental-related procedures and treatment modalities that will improve healthcare outcomes for all Americans. Areas benefiting from such research may include, but are not limited to bisphosphonate-related osteonecrosis of the jaw, dental pulp and adult derived stem cell research, wound healing, pain management, tissue engineering, minimally invasive surgery and maxillofacial trauma.

Introduction

Mr. Chairman and members of the Subcommittee, thank you for the opportunity to appear before you this morning. I am Dr. Jay P. Malmquist, an oral and maxillofacial surgeon from Portland, Oregon, and president of the American Association of Oral and Maxillofacial Surgeons (AAOMS). The AAOMS is the professional association representing the approximately 8,000 oral and maxillofacial surgeons who currently practice in the United States. I am here today in my capacity as president of the AAOMS to urge support for a 5.3%, or \$410 million, increase in funding for interdisciplinary research under the National Institute of Dental and Craniofacial Research (NIDCR) during fiscal year 2007.

What is oral and maxillofacial surgery?

As the preeminent diagnostic and surgical specialty of dentistry, Oral and Maxillofacial Surgery (OMS) is uniquely positioned between medicine and dentistry in the health care delivery system. Oral and maxillofacial surgeons diagnose and surgically manage benign and malignant diseases and disorders of the oral and maxillofacial region; traumatic hard and soft tissue facial injuries; congenital or acquired jaw or facial deformities; temporomandibular joint disorders; and the restoration of dental function with dental implants. Treatment advances in each of these areas rely heavily on well-constructed and well-funded research studies that function within the parameters of such agencies as the NIDCR and the National Institutes of Health Roadmap.

Future healthcare initiatives possible through increased NIDCR funding

The AAOMS greatly appreciates the support that the Subcommittee has provided NIDCR in previous years. Without your consistent help many of the initiatives that have proved so beneficial for OMS patients could not have been realized.

A 5.3%, or \$410 million increase in funding to the NIDCR, to support collaborative investigative research is an investment that will pay tremendous dividends in terms of the dental and medical well-being of citizens at all socio-economic levels. Recent research, including the AAOMS Third Molar Clinical Trials, which has benefitted from NIDCR funding, has shown that many systemic diseases and the delivery of low birth weight infants can often be traced to chronic oral inflammation and other oral health issues. .

In 2005 the AAOMS funded and hosted a unique research summit in Chicago, which was attended by over 100 surgeons, engineers, biologists, chemists, neuroscientists, pharmacologists and clinical practitioners. The purpose of this summit was to review emerging technologies that could potentially improve OMS health care delivery in the 21st century. Additional funding in 2007 would enable the AAOMS to schedule a second research summit to construct and initiate investigative studies in the following priority areas. Each of these OMS research priorities include interdisciplinary approaches and have overlapping and complementary applications.

Bisphosphonate-Related Osteonecrosis of the Jaws

We strongly urge NIH funding to address the significant public health problem associated with Bisphosphonate- related osteonecrosis of the jaws (ONJ).

Bisphosphonates, a primary treatment modality for certain types of cancer and for osteoporosis, may lead to a condition known as osteonecrosis of the jaws (ONJ), which can leave patients with large areas of exposed bone in their jaws. The condition is extremely painful, infected and difficult to treat. At present, an estimated 10 million people in the US have osteoporosis, and their numbers are expected to increase as the population ages. Research is urgently needed to

establish the incidence of ONJ in patients being treated with bisphosphonates. We must understand the mechanism of the disease in order to identify risk factors for ONJ, and to develop effective treatments.

Dental Pulp and Adult Derived Stem Cell Research

Research funding to explore the potential use of dental pulp as a source of Adult Derived Stem Cells (ADSC) should be included in the national research priorities.

ADSCs are multipotent cells that have the potential to differentiate into bone, muscle, cartilage, nerve, and vasculature under appropriate conditions. They have become a major focus of study as an alternative to the use of embryonic stem cells. Sources of ADSCs include iliac crest, adipose cells and dental pulp; specifically pulp from developing impacted third molars and deciduous teeth.

Stem cell biology research has the potential to provide advanced therapeutics in medicine and dentistry by replacing damaged or diseased parts or tissues, and by helping us understand degenerative disease, discover new drugs to induce tissue regeneration, and comprehend the mechanisms and prevention of carcinogenesis.

Because oral and maxillofacial surgeons perform third molar extractions everyday, the potential exists to collect, isolate, and store ADSCs from dental pulp for our patients' future use.

Wound Healing

Funding for a inter-disciplinary clinical investigation and application to the oral and maxillofacial region of potential advances in wound healing, including angiogenesis, growth factors and intracellular signaling pathways, and pharmacologic high throughput, would lead to research and findings that could significantly decrease morbidity from injuries in these populations.

Impaired wound healing is a major concern in the treatment of diabetic, irradiated, and immunocompromised patients, patients with severe traumatic injuries, and smokers. Excessive scar formation, delayed healing, or non-healing injuries to soft tissue or to bone in the maxillofacial region lead to long-term functional disturbances and deformities.

Pain Management

AAOMS recommends that funding be established to study the underlying science of pain and for clinical outcomes studies in better strategies for managing pain.

Contemporary clinical models used to study pain mechanisms and analgesics are based on oral surgical procedures. The third molar extraction model is the most popular acute pain model used to assess the efficacy of analgesics in clinical trials. Therefore, as a specialty, OMS is uniquely positioned to take advantage of emerging technologies to improve diagnostics and develop effective therapeutics for the prevention or management of acute and chronic pain.

Some pain states may represent more than a symptom of peripheral tissue injury or disease. The concept that pain is, in and of itself, a disease, arises from observations that neurons responsible for the transmission of pain may undergo dramatic changes in response to noxious stimulation. These changes may include phenotypic switching (i.e., gene expression with the synthesis of new signaling molecules and receptors), alterations in physical connections with other neurons (e.g., neuronal sprouting), and neuronal death, and may underlie some persistent or chronic pain states.

Tissue Engineering

Research in the field of tissue engineering requires a inter-disciplinary approach for the reconstitution of tissues and organs, in vitro, for use as model systems in basic and applied research.

Within the past decade, a new field of “tissue engineering” or “regenerative medicine” has emerged that offers a new and exciting alternative for maxillofacial reconstruction. Research in tissue engineering could promote advances in wound healing, as well as reconstruction and regeneration of oral and maxillofacial hard and soft tissues. The goal of tissue engineering is to develop three-dimensional functional tissue, and may include soft tissue grafting and hard tissue scaffolding.

Minimally Invasive Surgery

Research in the development and application of minimally invasive surgical instrumentation and techniques could provide a significant advantage over open surgical technique in the treatment of oral and maxillofacial fractures and in reconstruction of congenital and acquired deformities.

In the last decade, traditional surgical procedures have been replaced by less invasive techniques, basically eliminating long-term hospital stays. The use of minimally invasive surgery will have a profound effect on wound healing, reconstruction, and donor-site morbidity. Three-dimensional imaging for navigation, endoscopy, miniaturization, nanotechnology, and robotics are promising technologies for research and eventual application.

Maxillofacial Trauma

Longitudinal clinical trials that evaluate the long-term results of various treatments could augment treatment options and decrease disability.

Advances in the treatment of maxillofacial trauma is an area of research that would provide significant value not only to our military personnel who experience a high rate of such injuries, particularly during current military conflicts, but also to the 18-23% of US non-fatal injuries that involve the maxillofacial area. Oral and maxillofacial trauma can be difficult to treat and may result in lasting disability.

Summary

Improving the quality of life for those patients who suffer the pain and disfigurement that accompany maxillofacial trauma and disease is a priority for oral and maxillofacial surgeons. Our education and four or more years of hospital based surgical residency training have prepared us to significantly reduce the suffering endured by these patients, but there is so much more we can do with the proper research tools and funding. This Subcommittee has repeatedly shown that it shares our belief in the value of research and the promise that well-designed, properly funded studies hold for the development of better and more effective patient treatments.

We understand that there is a need to control budget allocations, particularly during a time of war. However, the conditions and potential treatments I have discussed this morning are those that are too often visited upon our young men and women on the front lines of the battles in Afghanistan and Iraq. A significant percentage of injuries on the battlefield are sustained to the maxillofacial region, it is the oral and maxillofacial surgeon who is using his or her skill to repair the wounds to these soldiers and bring them home alive.

With an additional 5.3%, or \$410 million, allocated to the NIDCR for collaborative research activities, we can bring the benefits of a healthy and secure future to our citizens and keep the United States healthcare delivery system at the forefront of medicine.

Mr. Chairman, on behalf of the fellows and members of the American Association of Oral and Maxillofacial Surgeons, I thank you for this opportunity to bring this information to the attention of the Subcommittee.

Witness's Biography

Jay P. Malmquist, DMD

Jay P. Malmquist, DMD of Portland, Oregon is president of the American Association of Oral and Maxillofacial Surgeons (AAOMS), the not-for-profit professional association serving the specialty of oral and maxillofacial surgery, the surgical arm of dentistry. Dr. Malmquist received his undergraduate degree from the University of Oregon and doctorate in dental medicine with high honors from the University of Oregon Dental School. He served as an intern and a general dentistry officer with the U.S. Army, having obtained the rank of Captain before returning to Oregon to undergo his residency in oral and maxillofacial surgery at the Oregon Health Science University in Portland.

Dr. Malmquist is a diplomat of the American Board of Oral and Maxillofacial Surgery, the National Dental Board of Anesthesiology and the International Congress of Oral Implantologists. He also holds fellowships in the American College of Oral and Maxillofacial Surgeons, the American College of Dentists, and the International College of Dentists and is a member of the American Dental Association, amongst several other dental and health care organizations. Dr. Malmquist operates a private oral and maxillofacial surgery practice in Portland.

Disclosure Statement

In compliance with the Rules of the House, clause 2(g)(4) of Rule XI, requiring additional information from nongovernmental witnesses, Jay P. Malmquist, DMD, a witness appearing in a nongovernmental capacity before the House Committee on Appropriations Subcommittee on Labor, Health and Human Services, Education and Related Agencies, attests that neither he nor the American Association of Oral and Maxillofacial Surgeons, a national professional association for which he serves as president and on whose behalf he is testifying, are the recipients of any Federal grant or sub-grant, or contract or sub-contract, received during the current fiscal year or either of the two previous fiscal years.